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METEOROLOGICAL OFFICE

London Road, Bracknell, Berkshire

CLIMATOLOGICAL MEMORANDUM

No. 74

MAPS OF MEAN NUMBER OF DAYS OF SNOW OVER THE UNITED KINGDOM 1941-1970

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Climatological Services (Met.O.3)

October 1975

CLIMATOLOGICAL MEMORANDUM NO 74

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Introduction

The maps in this memorandum show the mean number of days during 1941-70 when snow fell at any time of the day (00-24 GMT) during the months November to April and the mean number of days of snow lying at 09 GMT during the months December to March. Maps for the year are also included.

Station values of the number of days with snow falling and snow lying strongly reflect the topographic pattern. The rate of increase of the number of days with height decreases from north to south for both snow falling and snow lying. The scatter of observations are considerable and the following are rough estimates for heights up to 400 metres above mean sea level.

	Days per year/100 metres			
	N Scotland	S Scotland	N England	Wales and Midlands
Snow falling	>10	9	8	5
Snow lying	17	13	12	5

The sparseness of information above 400 metres does not allow any firm conclusions to be drawn on conditions at higher levels. It has not been possible to confirm the values given in the Climatological Atlas of the British Isles[1] which suggests for altitudes of about 1200 m a total addition of 140 days of snow falling to the near-sea-level annual values. From observations of snow on mountains[2] made from low-level observation points, it appears that the rate of change with altitude of the number of days of snow lying increases above about 400 m and decreases again above about 800 m. It is suggested that annual values at about 800 m are about 4 times the near-sea-level value.

Snowfall amounts are measured as the equivalent water content and included in rainfall statistics.

Days of Snow Falling

A day of snow falling is a day on which snow or sleet (rain or drizzle mixed with snow) is observed to fall at any time during the 24-hour period (midnight to midnight). The chance of falling snow being noticed, particularly at night obviously increases if routine observations are made throughout the 24 hours. This has been taken into account by increasing, by 25 per cent, the values for climatological stations where only one routine observation (at 09 GMT) is made. (This average figure was obtained by comparing values at stations making one observation per day with those at nearby stations making 4 or more observations per day).

Figure 1 shows the variability of snowfall from year to year during the 3 winter months for a selection of places: Eskdalemuir (Dumfriesshire), Huddersfield Oakes (W Yorkshire), Edgbaston (Birmingham), Kew (Greater London).

Days of Snow Lying

A day of snow lying is defined as a day on which at 09 GMT snow covers half or more of the ground in an open level area representative of the station. Details of observational procedure are given in the "Observer's Handbook"[3].

The number of days of snow lying is one of the most variable of meteorological elements and the averages have been derived from a wide range of values in individual years. Figure 2 shows these variations at the same places as are given for days of snow falling. The number of days of snow lying depends not only on how often the snow falls but also on the amount falling and the rate of melt, which in turn is determined by the nature of the underlying surface and the subsequent temperature and radiation conditions. Over rough terrain snow can drift into hollows and at some high altitude sites (such as sheltered gullies in Scotland) snow can accumulate and remain all the year.

Snow Depths

Figure 3 shows for each winter in the period 1946 to 1973, the number of days when the total snow depth at 09 GMT is within certain ranges at a selection

of places in Scotland and England.

Frequencies of snow depths for a number of places are published in Climatological Memoranda Nos 70[4] and 76[5].

More monthly snow statistics (maximum depths attained with dates, and number of days of snow falling and snow lying) are available for a special network of about 190 stations, whose data are published in the annual Snow Survey of Great Britain[2].

REFERENCES

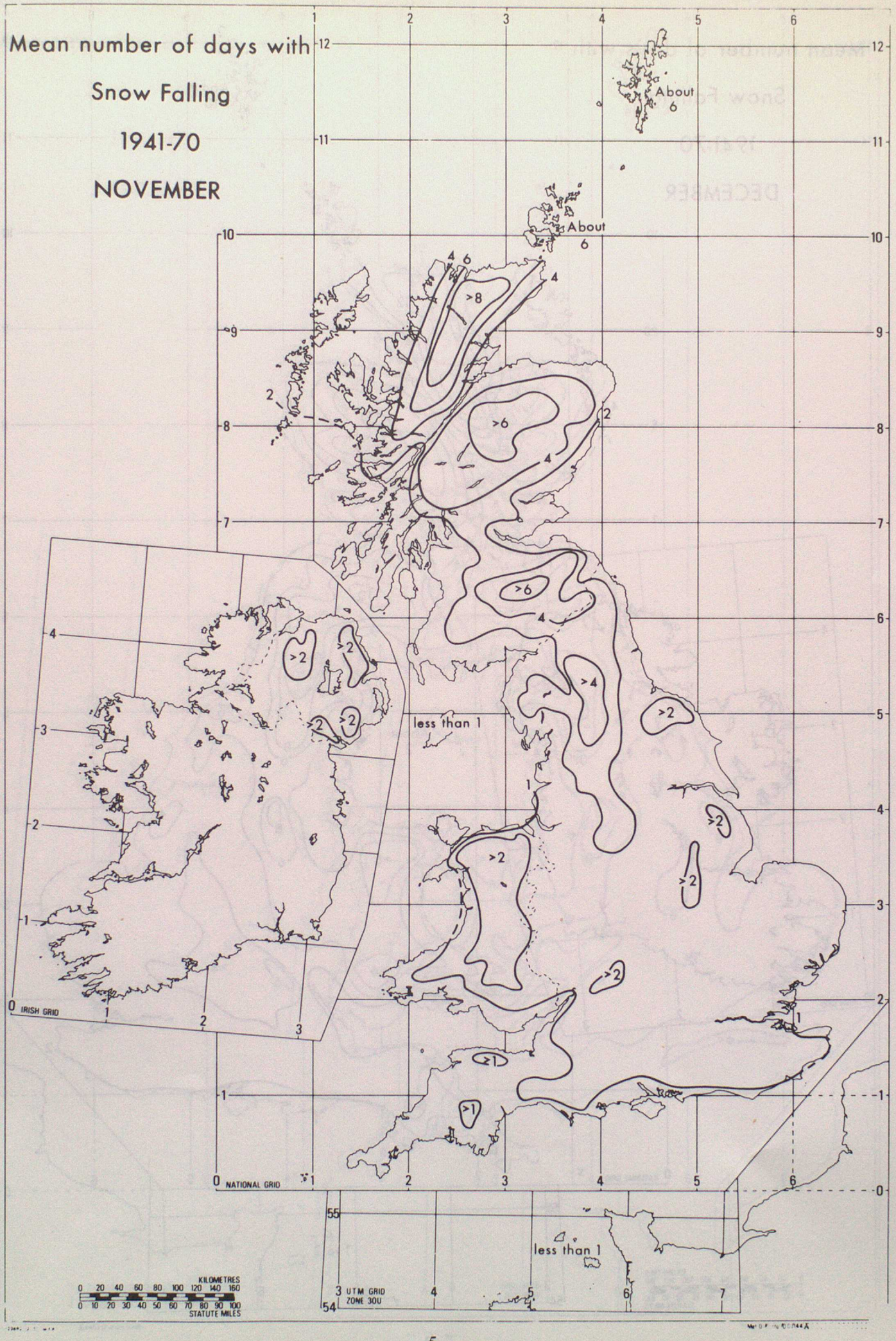
(1) Climatological Atlas of the British Isles H.M.S.O. 1952

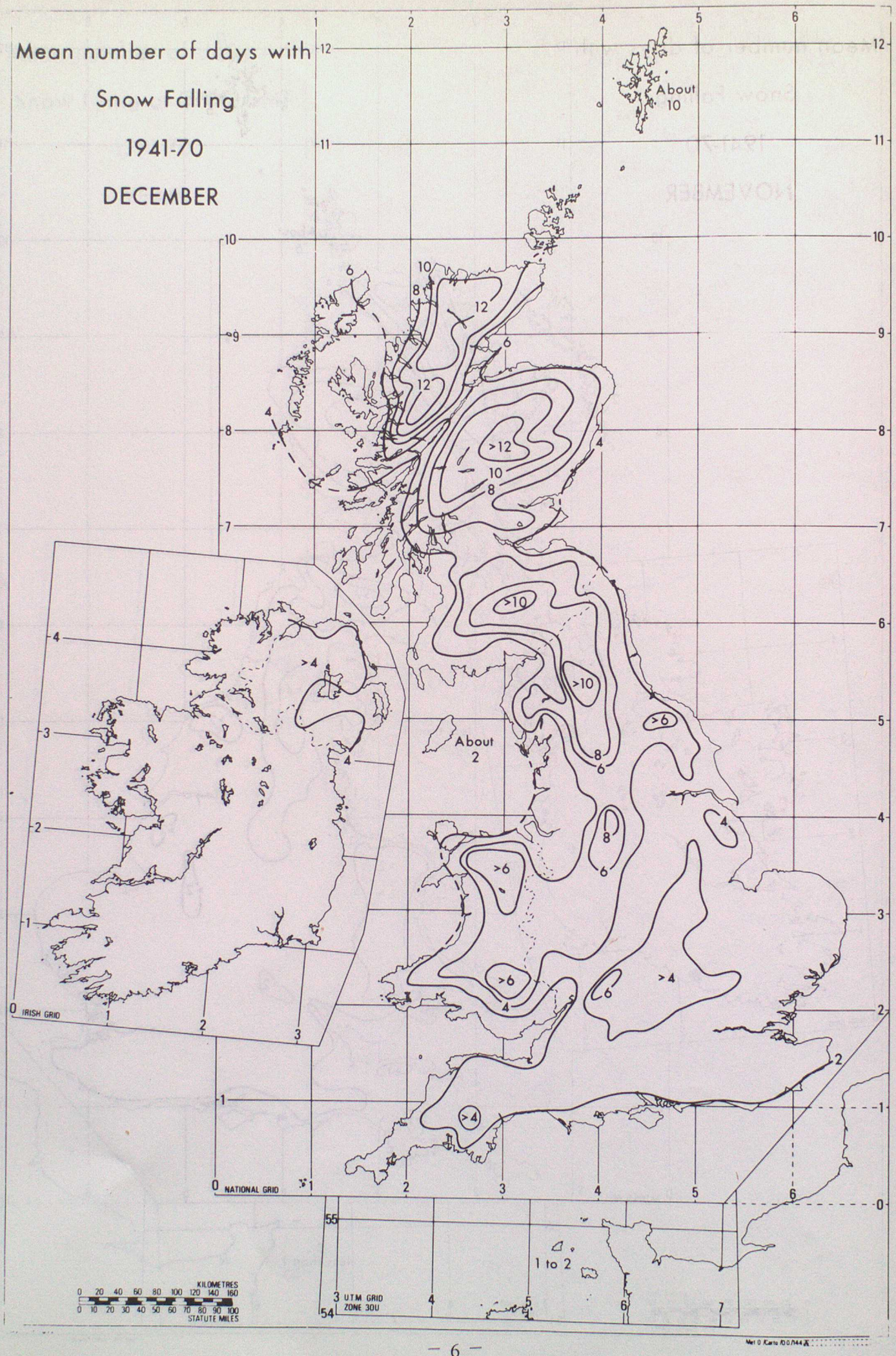
(2) Snow Survey of Great Britain. Meteorological Office (Met O 3) Bracknell

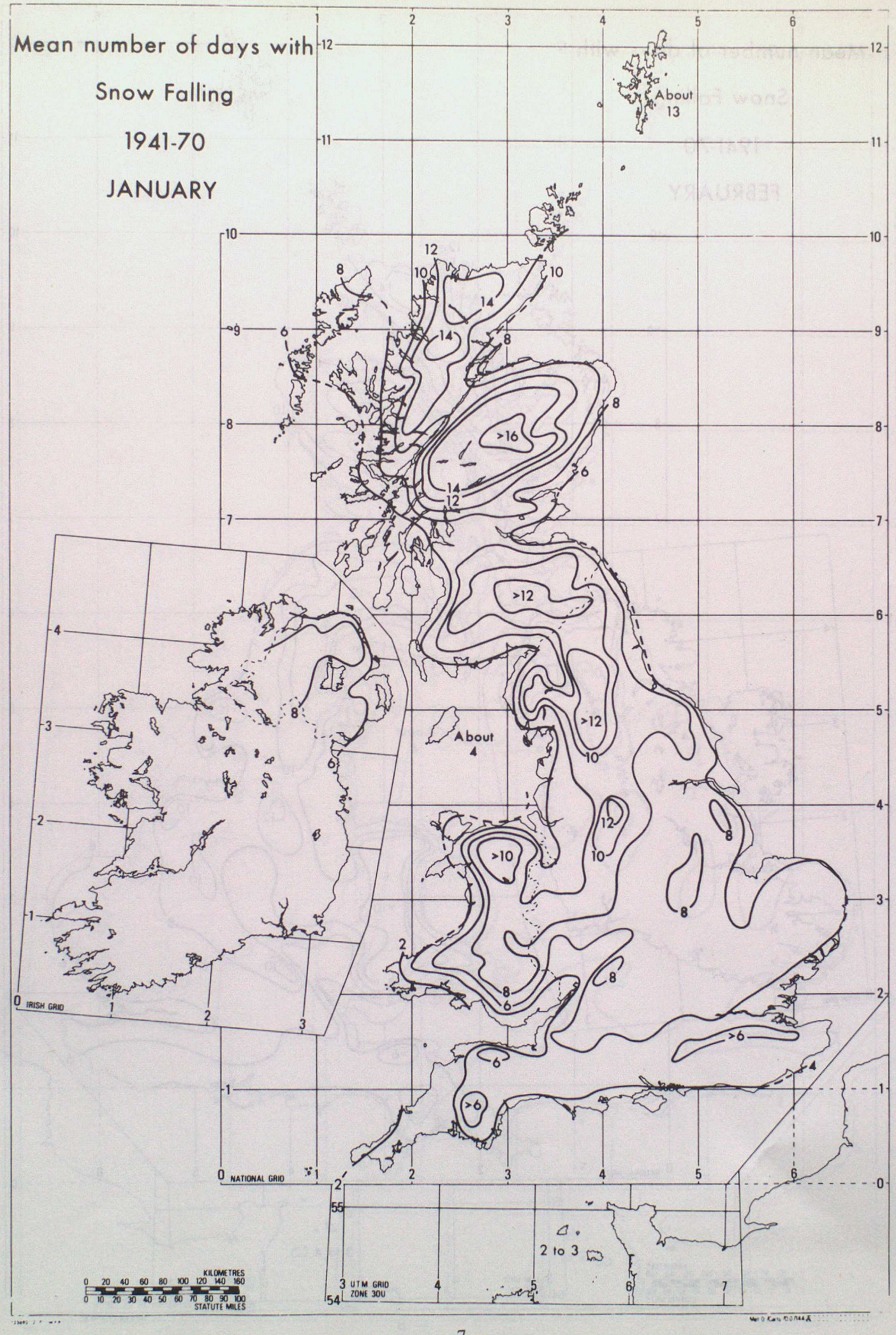
(3) Observer's Handbook. H.M.S.O. 1969

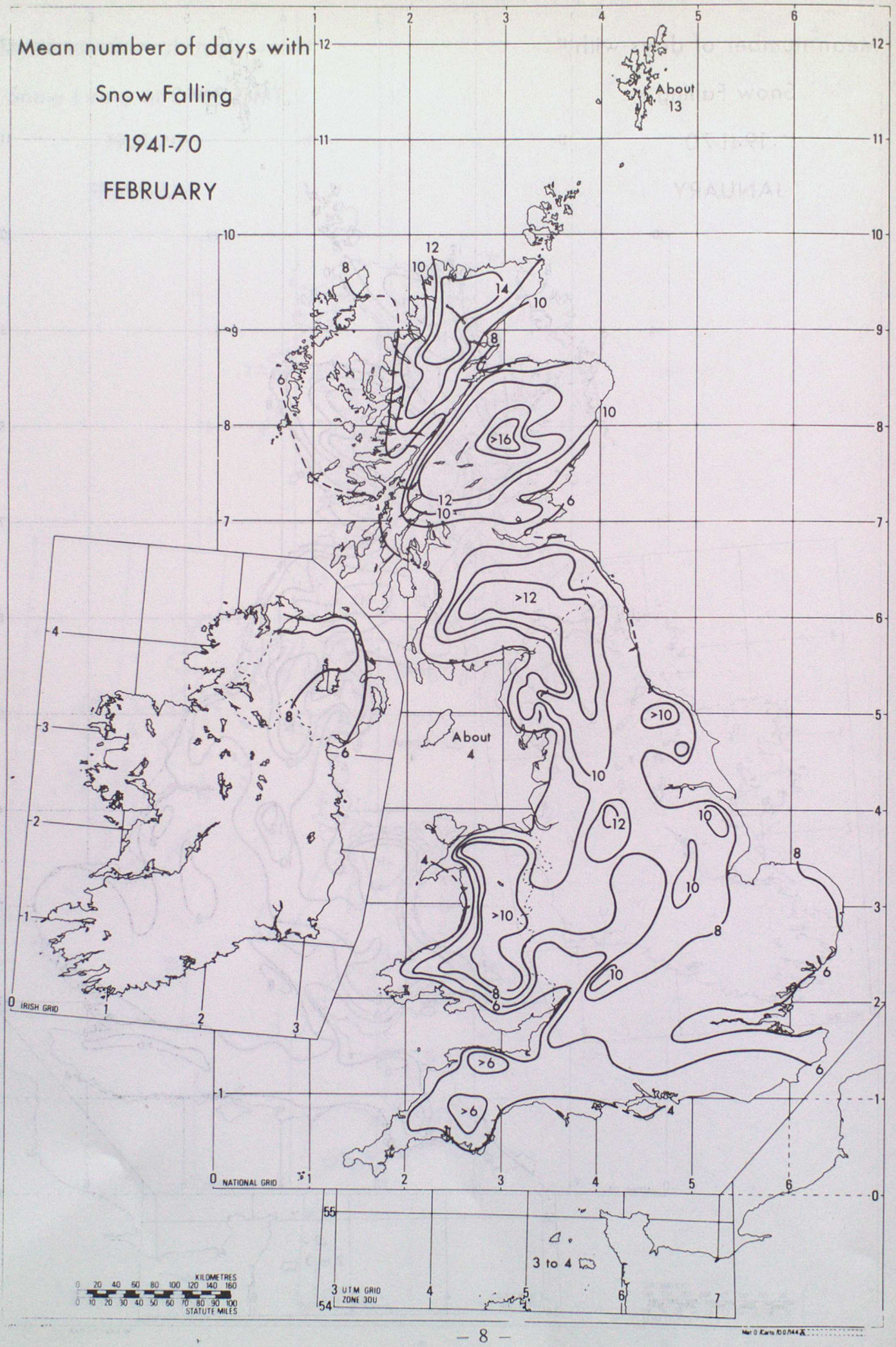
(4) A Dunsire. Climatological Memorandum No 70. Frequencies of snow depths and days of snow lying at stations in Scotland for period ending winter 1970/71. Meteorological Office (Met O 3) Bracknell. December 1971.

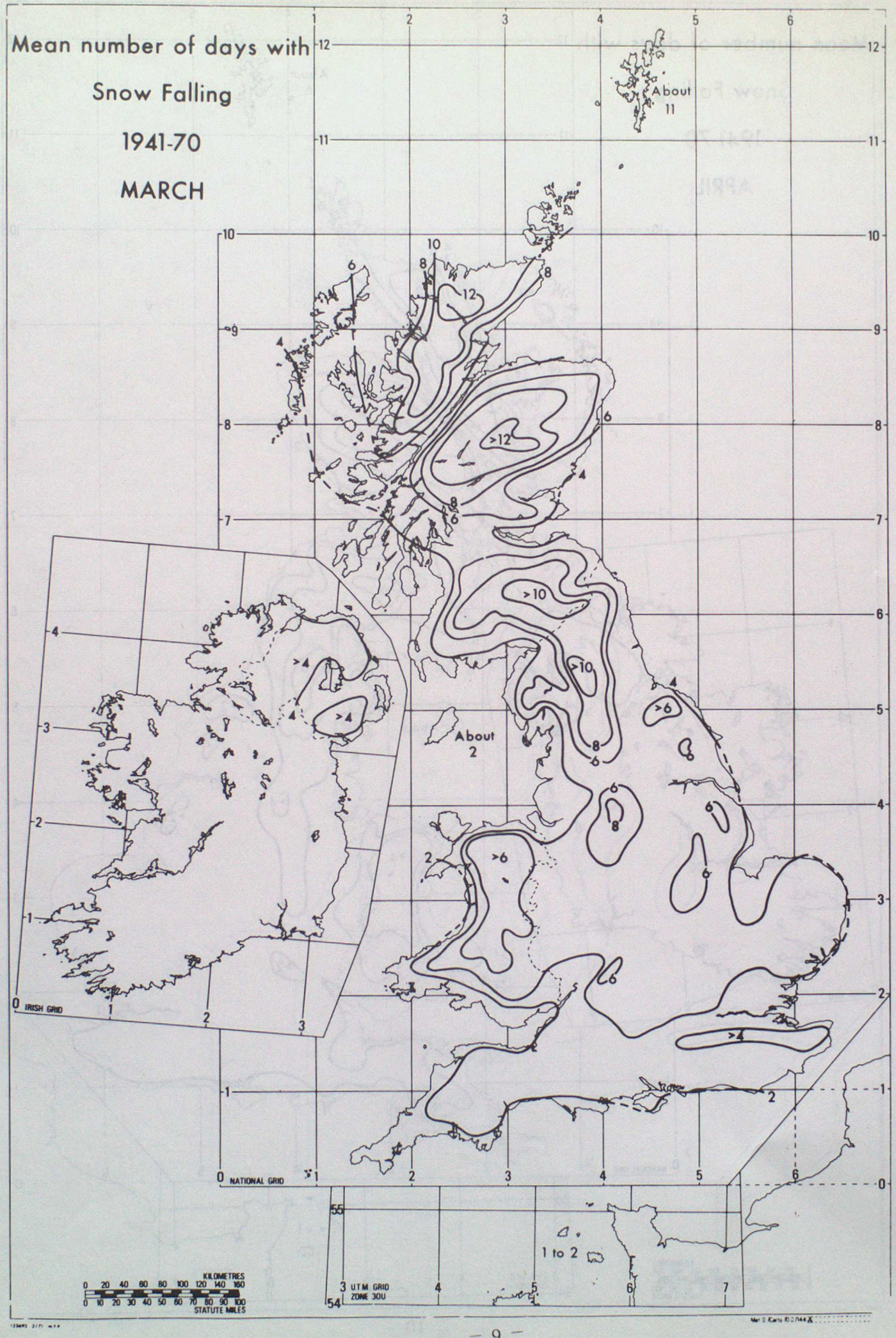
(5) Climatological Memorandum No 76 Statistics of snow depths at selected stations in England, Wales and Northern Ireland. November 1946 to April 1973. Meteorological Office (Met O 3) Bracknell (to be published).


Mean number of days with
Snow Falling
1941-70
NOVEMBER
About 6
About 6
>8
>6
>6
>4
>4
>2
>2
>2
>2
>2
>2
>2
>2
>1
>1
less than 1
less than 1
0 IRISH GRID
0 NATIONAL GRID
3 UTM GRID ZONE 30U
KILOMETRES
0 20 40 60 80 100 120 140 160
0 10 20 30 40 50 60 70 80 90 100
STATUTE MILES


Mean number of days with
Snow Falling
1941-70
DECEMBER
About 10
About 2
1 to 2
IRISH GRID
NATIONAL GRID
UTM GRID ZONE 30U
KILOMETRES
STATUTE MILES


Mean number of days with
Snow Falling
1941-70
JANUARY
About 13
About 4
2 to 3
IRISH GRID
NATIONAL GRID
UTM GRID ZONE 30U
KILOMETRES
STATUTE MILES


Mean number of days with
Snow Falling
1941-70
FEBRUARY
About 13
>16
>12
>10
>6
About 4
3 to 4
IRISH GRID
NATIONAL GRID
UTM GRID ZONE 30U
KILOMETRES
STATUTE MILES


Mean number of days with
Snow Falling
1941-70
MARCH
About 11
>12
>10
>6
>4
About 2
1 to 2
IRISH GRID
NATIONAL GRID
UTM GRID ZONE 30U
KILOMETRES
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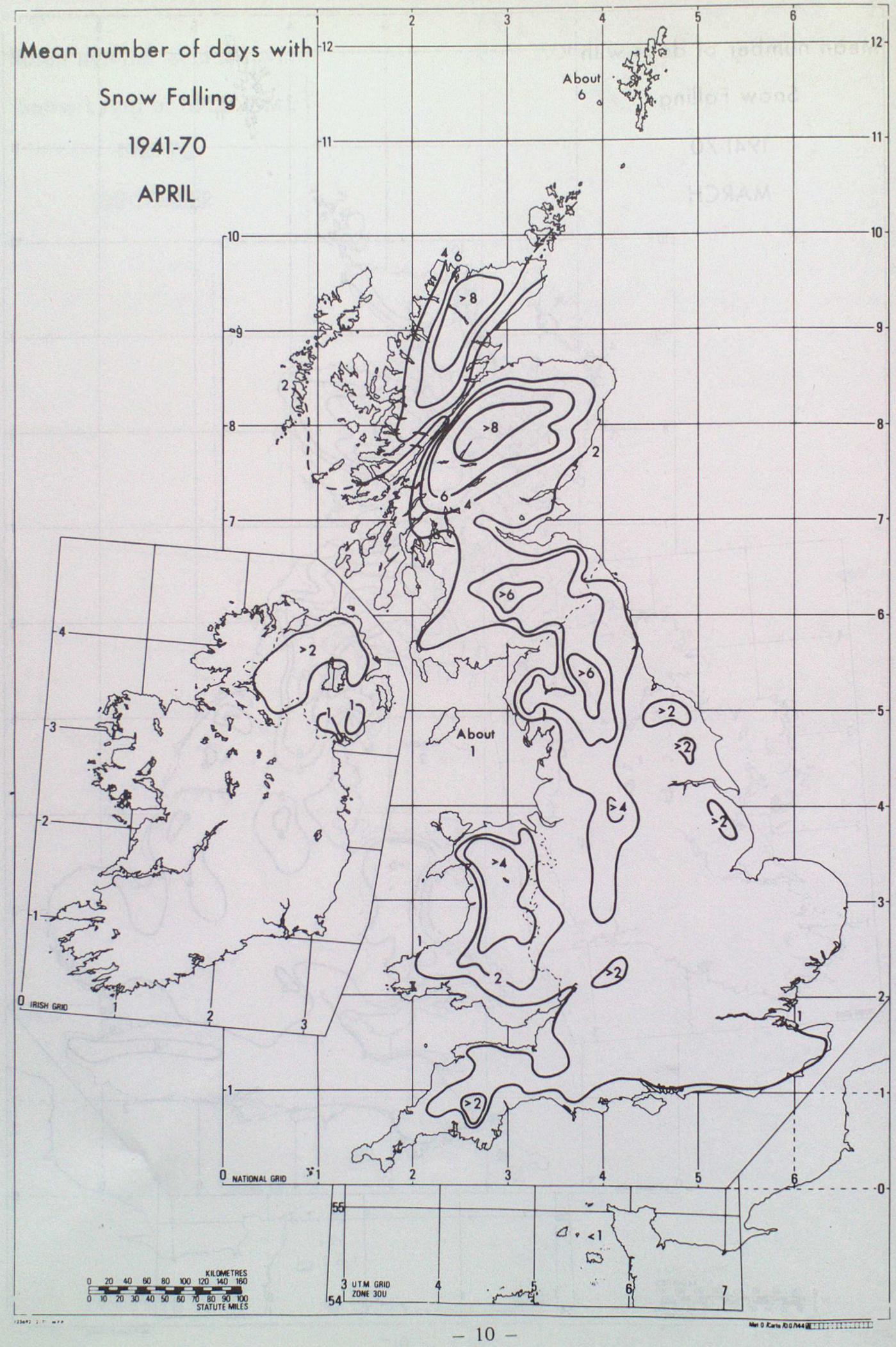
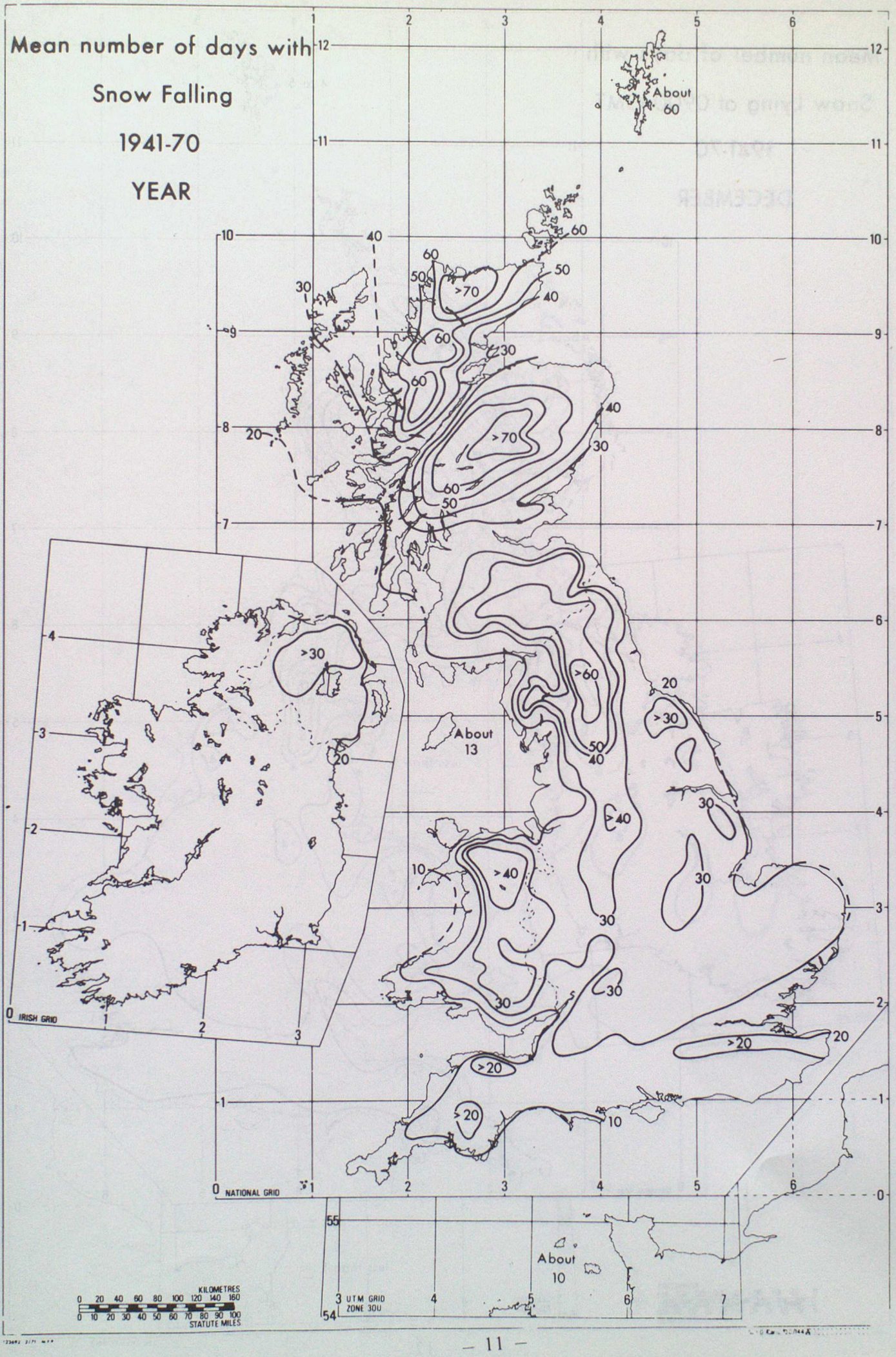
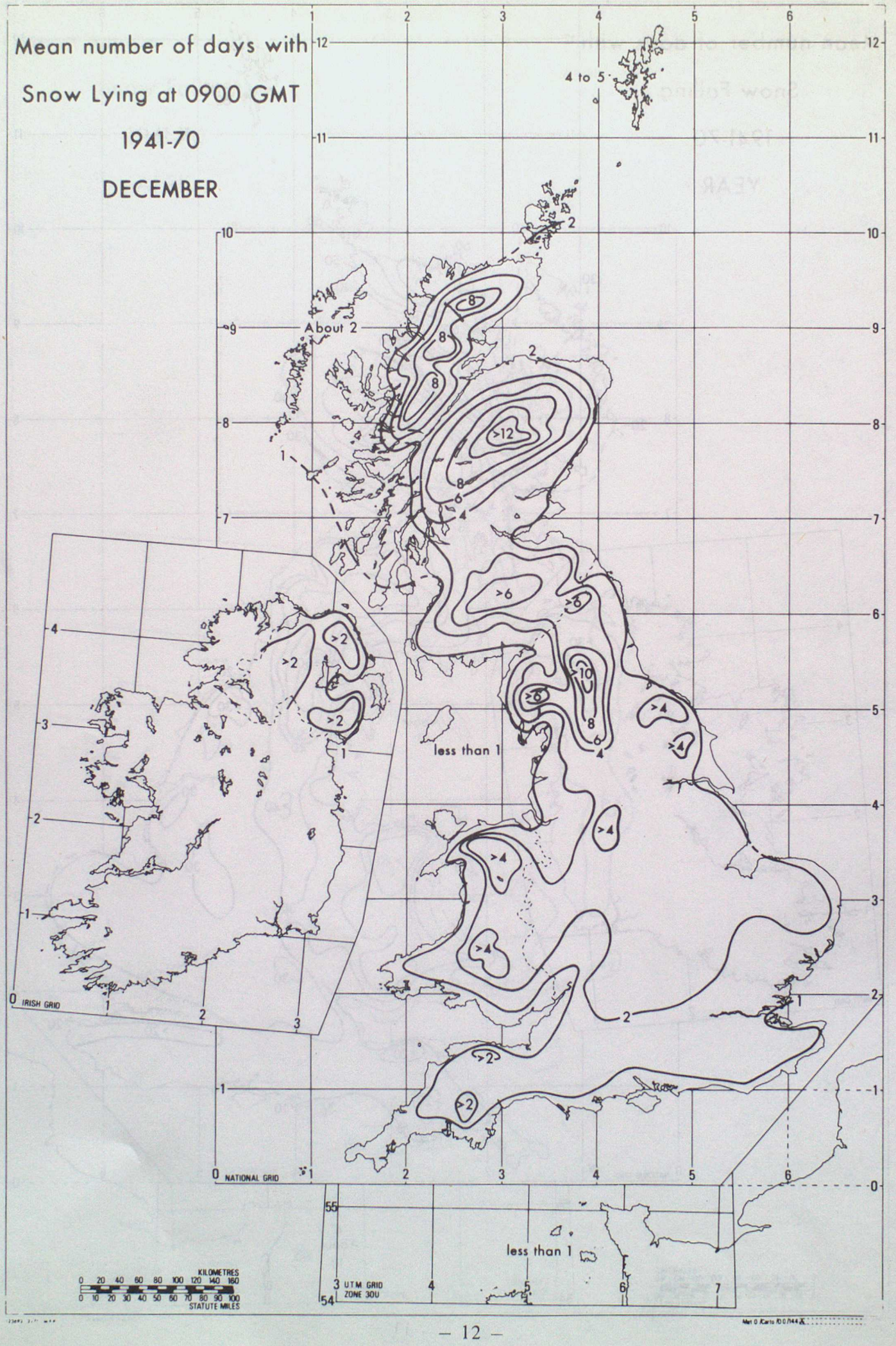
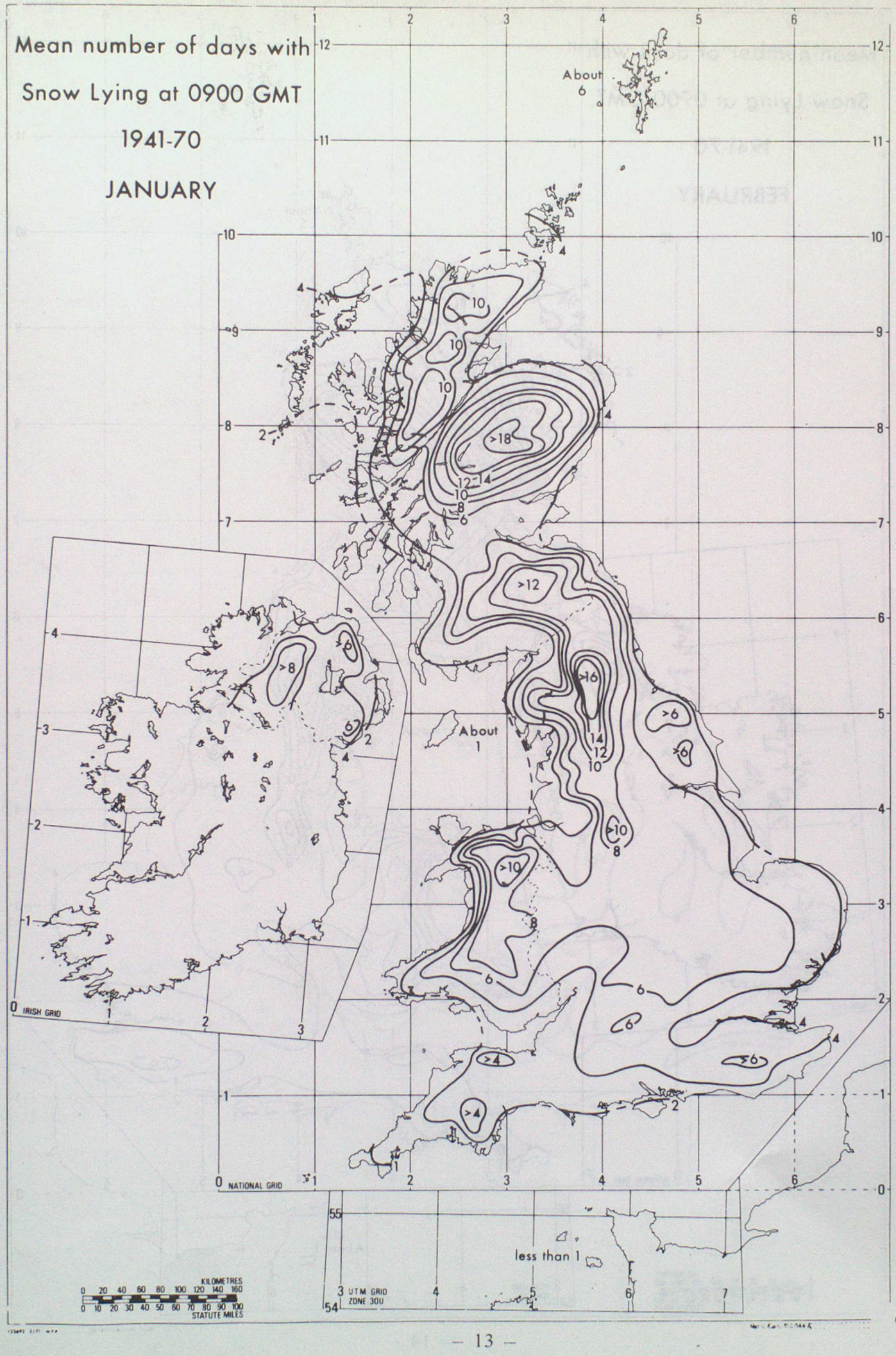
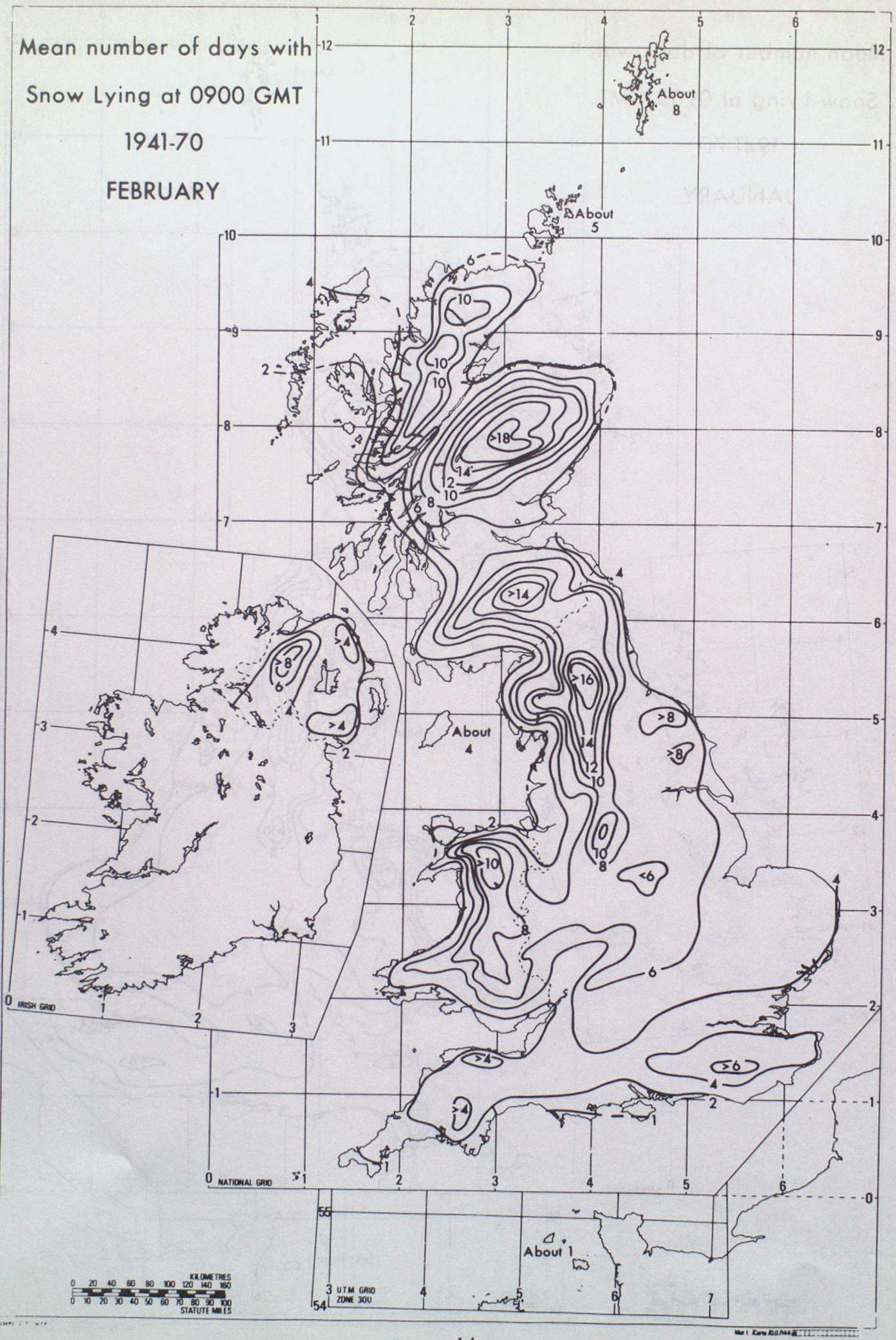
0 10 20 30 40 50 60 70 80 90 100
STATUTE MILES

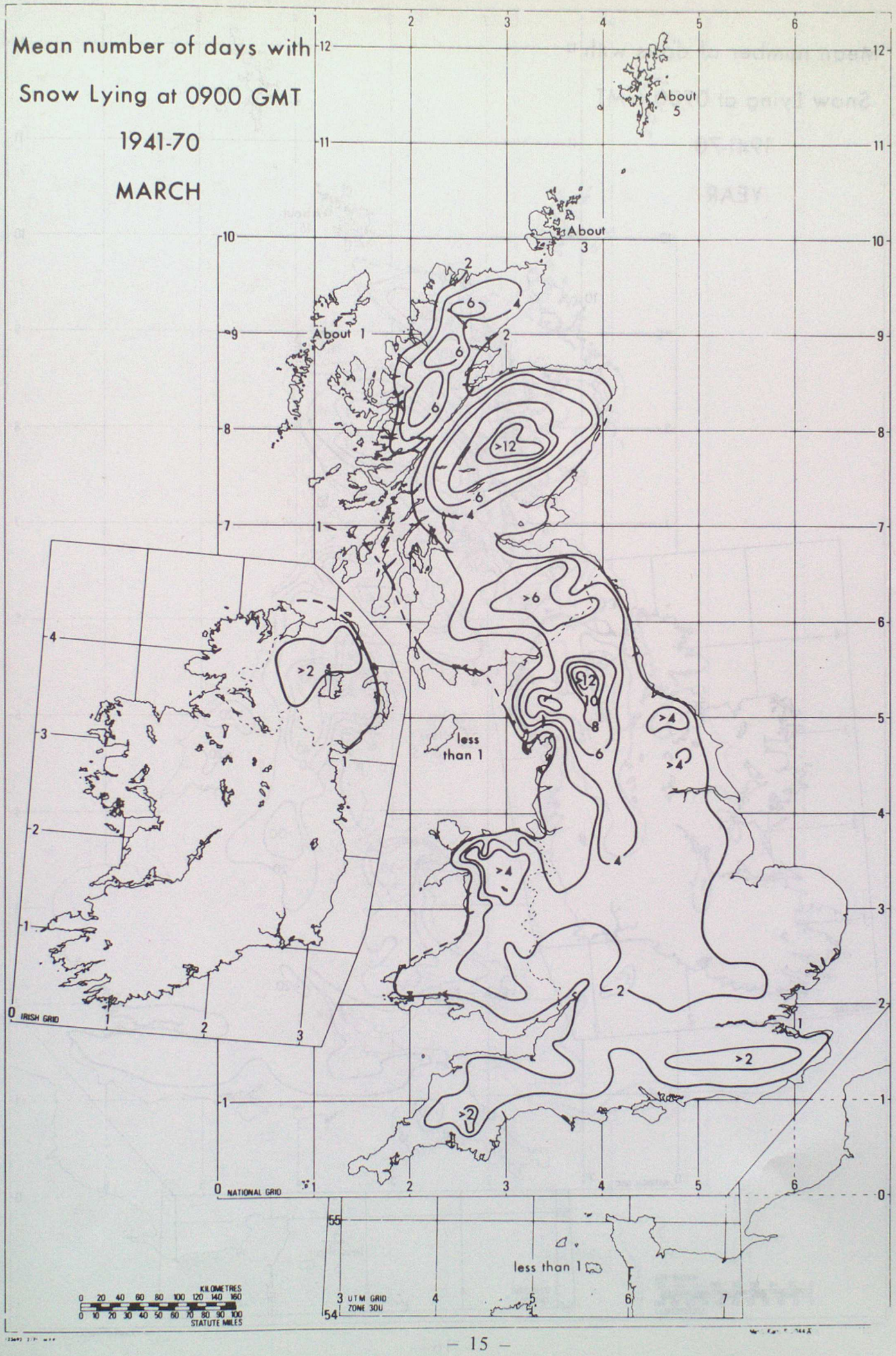

Mean number of days with
Snow Falling
1941-70
APRIL
About
6
>8
>8
6
4
2
>6
>6
>2
>2
>2
>4
>4
>2
>2
>2
About
1
<1
IRISH GRID
NATIONAL GRID
UTM GRID
ZONE 30U
KILOMETRES
0 20 40 60 80 100 120 140 160
0 10 20 30 40 50 60 70 80 90 100
STATUTE MILES

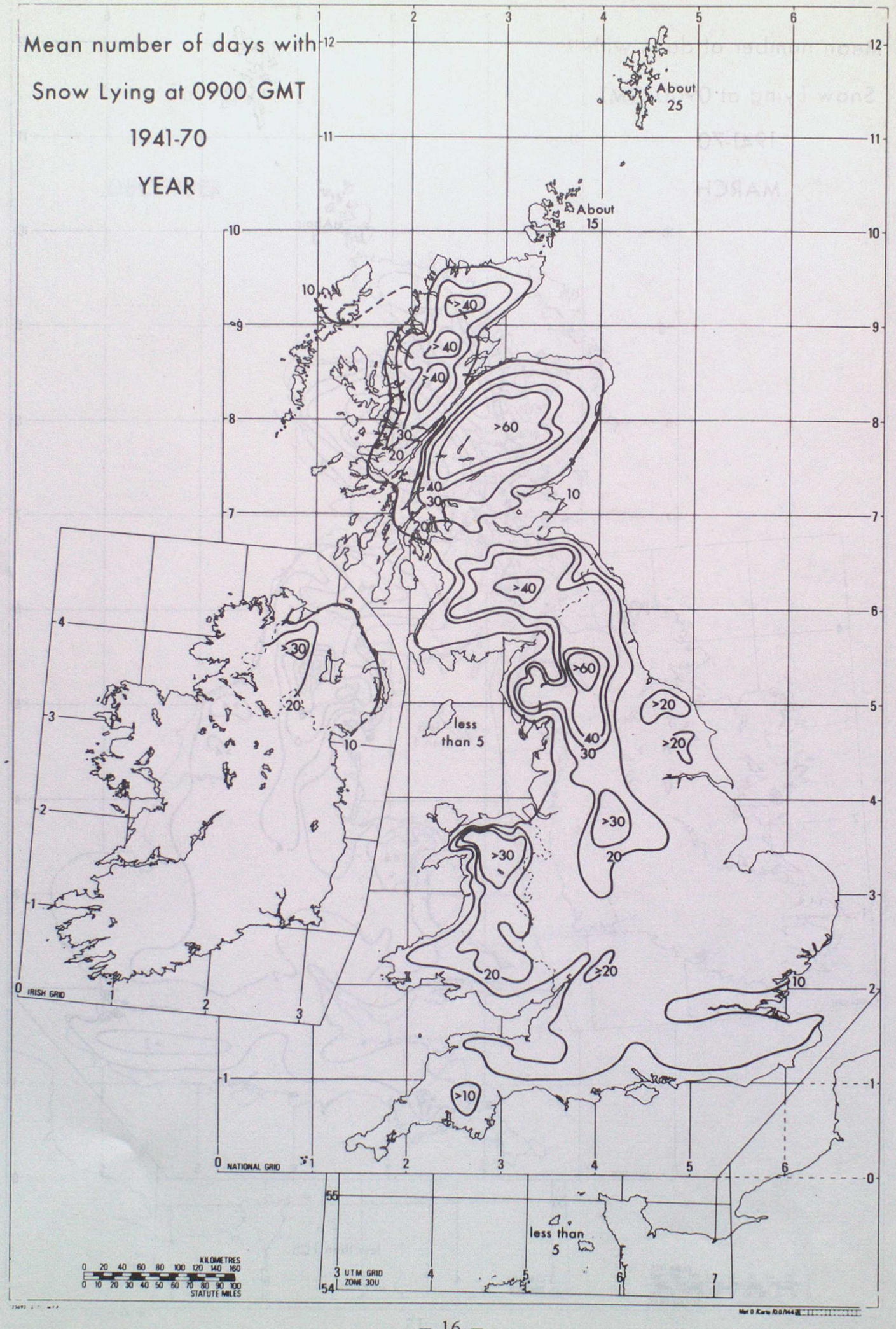

Mean number of days with
Snow Falling
1941-70
YEAR
About 60
About 13
About 10
IRISH GRID
NATIONAL GRID
UTM GRID ZONE 30U
KILOMETRES
STATUTE MILES


Mean number of days with
Snow Lying at 0900 GMT
1941-70
DECEMBER
4 to 5
About 2
less than 1
less than 1
IRISH GRID
NATIONAL GRID
UTM GRID
ZONE 30U
KILOMETRES
STATUTE MILES


Mean number of days with
Snow Lying at 0900 GMT
1941-70
JANUARY
About 6
About 1
less than 1
>18
>12
>16
>10
>8
>6
>4
IRISH GRID
NATIONAL GRID
UTM GRID ZONE 30U
KILOMETRES
STATUTE MILES


Mean number of days with
Snow Lying at 0900 GMT
1941-70
FEBRUARY
About 8
About 5
About 4
About 1
>18
>14
>16
>10
>8
>6
>4
<6
IRISH GRID
NATIONAL GRID
UTM GRID ZONE 30U
KILOMETRES
STATUTE MILES


Mean number of days with
Snow Lying at 0900 GMT
1941-70
MARCH
About 5
About 3
About 1
>12
>6
>4
>2
less than 1
less than 1
IRISH GRID
NATIONAL GRID
UTM GRID ZONE 30U
KILOMETRES
STATUTE MILES


Mean number of days with
Snow Lying at 0900 GMT
1941-70
YEAR
About 25
About 15
>40
>40
>40
>60
30
20
40
30
20
10
>40
30
>60
>20
>20
less than 5
40
30
>30
20
>30
20
>20
10
>10
less than 5
IRISH GRID
NATIONAL GRID
UTM GRID ZONE 30U
KILOMETRES
0 20 40 60 80 100 120 140 160
0 10 20 30 40 50 60 70 80 90 100
STATUTE MILES

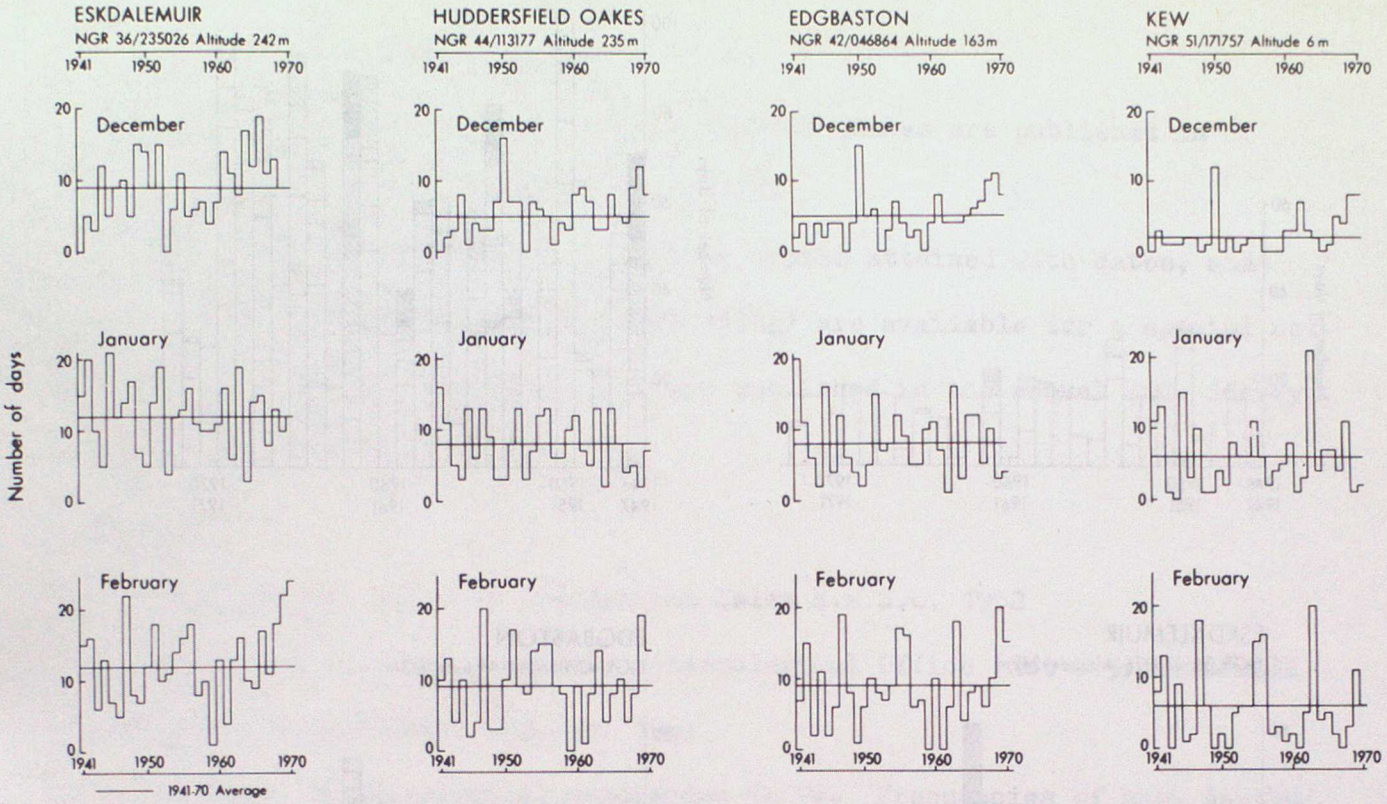


Figure 1 YEAR TO YEAR VARIATION OF THE NUMBER OF DAYS OF SNOW OR SLEET FALLING IN THE THREE WINTER MONTHS 1941-70

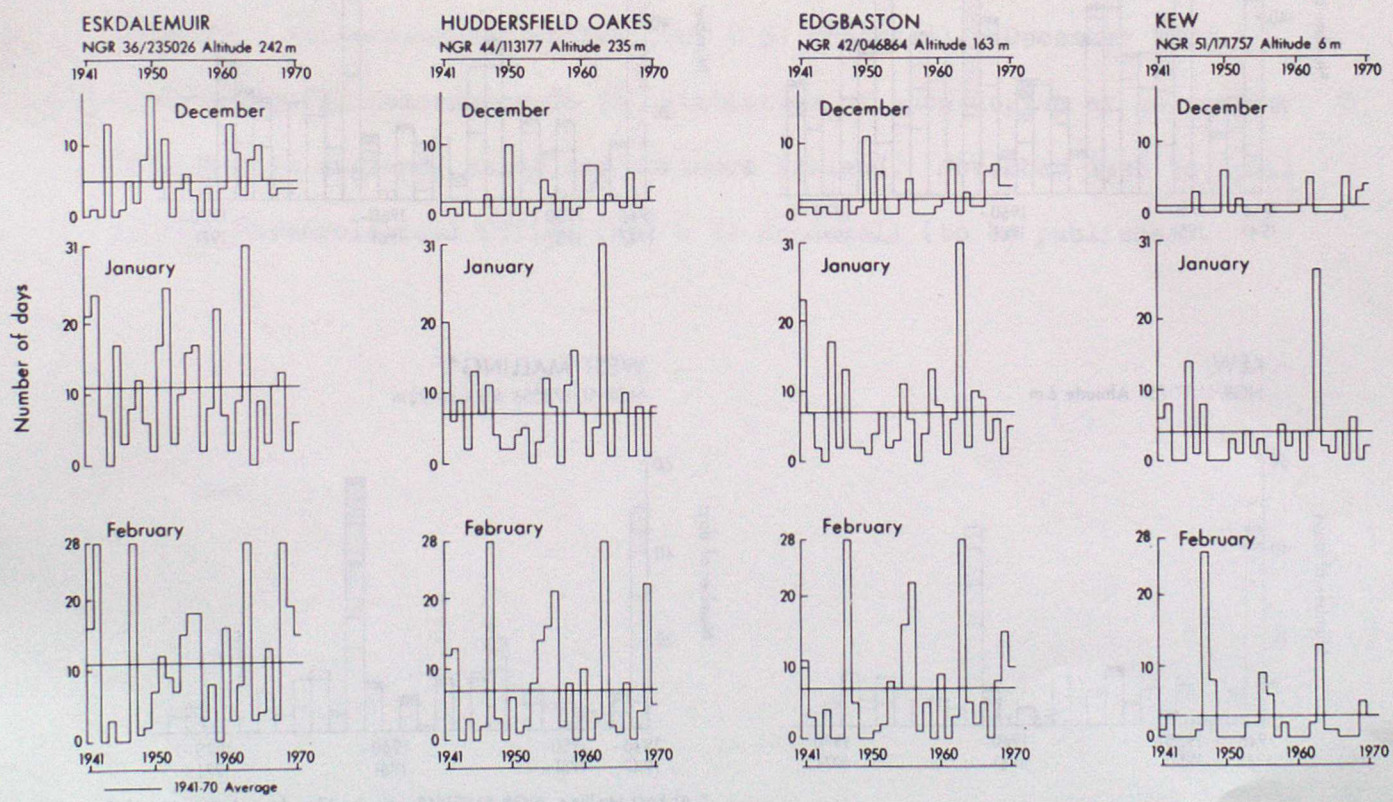
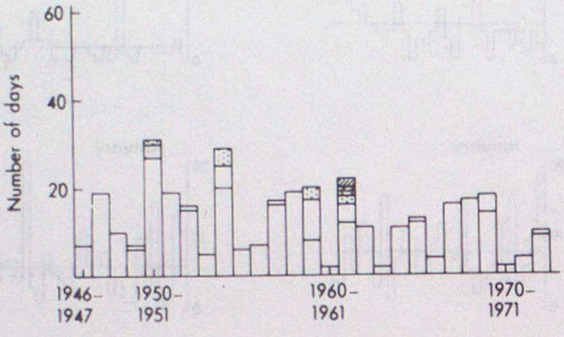
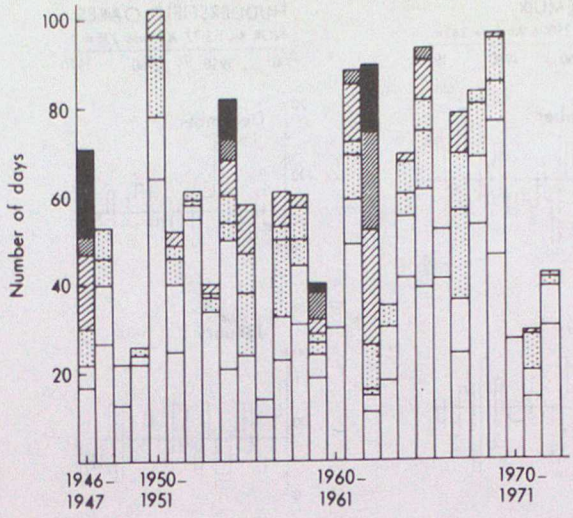


Figure 2 YEAR TO YEAR VARIATION OF THE NUMBER OF DAYS WITH SNOW LYING AT 0900 GMT IN THE THREE WINTER MONTHS 1941-70

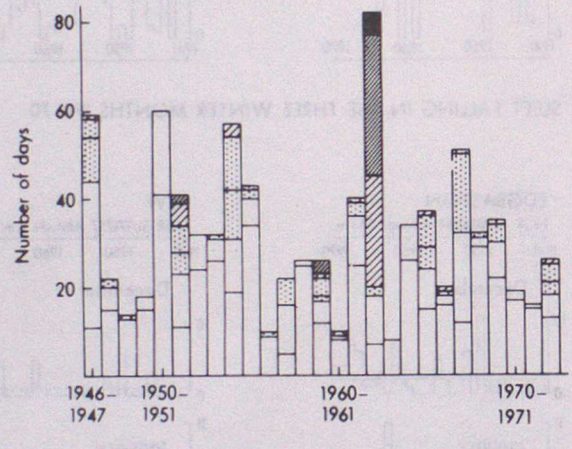
FORT WILLIAM
NGR 27/123759 Altitude 8 m



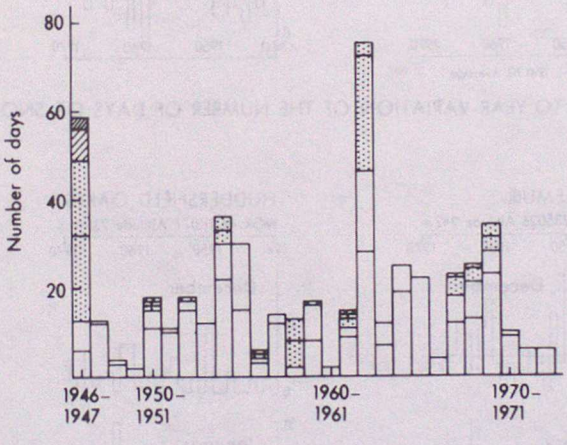
BALMORAL
NGR 37/260946 Altitude 283 m



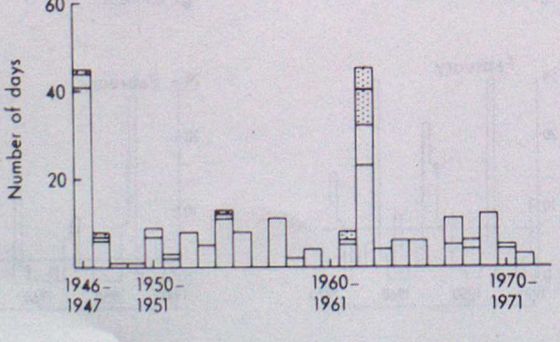
ESKDALEMUIR
NGR 36/235026 Altitude 242 m



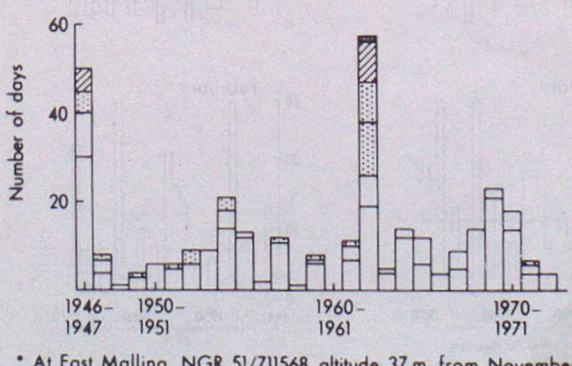
EDGBASTON
NGR 42/046864 Altitude 163 m



KEW
NGR 51/171757 Altitude 6 m



WEST MALLING*
NGR 51/678556 Altitude 93 m



* At East Malling, NGR 51/711568 altitude 37 m from November 1960

Figure 3 NUMBER OF DAYS WITH TOTAL SNOW DEPTH AT 0900 GMT WITHIN STATED RANGES FOR EACH WINTER (NOVEMBER TO APRIL) 1946/47 TO 1972/73

Depths in centimetres of level undrifted snow

6–10 | 16–20 | 21–30 | 31–40 | more than 40
5 or less | 11–15